

to the earth, when it entirely demolished a dwelling and a cotton house, scattering and carrying their contents great distances. Various articles of clothing were seen whirling through the air. Its track was narrow and about eight miles in length.

VERIFICATIONS.

Indications.—The detailed comparison of the tri-daily indications for November, with the telegraphic reports for the succeeding twenty-four hours, shows the general percentage of verifications to be 86.02 per cent. The percentages for the four elements are: Weather, 88.25; Direction of the Wind, 81.96; Temperature, 87.71; Barometer, 86.03 per cent. By geographical districts they are: For New England, 87.3; Middle Atlantic states, 88.4; South Atlantic states, 89.8; Eastern Gulf states, 85.4; Western Gulf states, 86.2; Lower Lake region, 85.3; Upper Lake region, 84.6; Tennessee and the Ohio valley, 86.8; Upper Mississippi valley, 86.4; Lower Missouri valley, 80.6; Northern Pacific coast region, 65.9; Central Pacific coast region, 86.6; Southern Pacific coast region, 93.5. There were 78 omissions to predict out of 3,690, or 2.00 per cent. Of the 3,612 predictions that have been made, 130, or 3.60 per cent. are considered to have entirely failed; 117, or 3.24 per cent. were one-fourth verified; 367, or 10.16 per cent. were one-half verified; 414, or 11.46 per cent. were three-fourths verified; 2,584, or 71.54 per cent. were fully verified, so far as can be ascertained from the tri-daily reports.

Cautionary Signals.—221 Cautionary signals were displayed during the month of November, 1881, of which 199, or 90.09 per cent., were fully justified by winds of twenty-five miles per hour, or over, at, or within, a radius of 100 miles of the station. Sixty-seven Off-shore signals were displayed, of which 51, or 76.12 per cent., were fully justified; 53 or 79.10 per cent., were justified as to direction; 61, or 91.05 per cent., were justified as to velocity, and 4, or 5.97 per cent., completely failed. Twenty-one Off-shore signals were changed from Cautionary. Two Northwest signals were displayed, both of which were fully justified. 290 signals, of all kinds, were displayed, of which 252, or 86.89 per cent., were fully justified. The above does not include signals ordered at 67 display stations, where the velocity is only estimated. 149 winds, of 25 miles, or over, were reported, for which no signals were ordered. 49 signals were ordered late.

NAVIGATION.

Stage of Water in Rivers.—In the table on the right-hand side of chart No. III are given the highest and lowest stages of water as observed at Signal Service stations during the month of November, 1881. The water in the Missouri river has remained at a very low stage throughout the month being at all stations, even on the date of highest water, from 10 to 18 feet below the danger-line. In the Mississippi, there has been a moderately high stage from St. Paul to Dubuque; at Davenport and Keokuk the water has been from 1 to 5 feet above the danger-line; at St. Louis within 6 inches of the danger-line, and from Cairo to New Orleans all stations remained from 4 to 8 feet below the danger-line. In the Ohio, Cumberland, Tennessee and Monongahela rivers the water remained quite low throughout the month, the highest being at Pittsburg where it reached within 8 feet of the danger-line. In the Red, Arkansas, Savannah and Sacramento rivers, no changes of importance took place; water quite low throughout the month.

Ice in Rivers and Harbors.—*Saginaw River:* East Saginaw, 25th, ice forming rapidly and people reported crossing on the ice at Zilwaukee. Bay City, 24th, ice formed during the night and on the following day river full of broken cakes of ice. *Dakota River:* Morriston, Dak., 14th, river frozen over. *Embarrass River:* Embarrass, Wis., 28th, river frozen over. *Manitowoc River:* Manitowoc, Wis., 20th, river frozen over. *Lake Huron:* Port Huron, 25th, schooner "A. J. Rogers," just in port from Thunder Bay, is badly iced up. Schooner "Emerald," from Presque Isle, 25th, vessel covered with a perfect coat of ice, everything on decks frozen solid. *Mississippi River:* Red Wing, Minn., 18th, large quantities of floating ice between St. Paul and Lake Pepin; steamer "Imperial" was from 4 p. m. of the 18th, until noon of the 22d, in making a distance of 60 miles. La Crosse, 15th, floating ice in river, first of season; 28th, ice broke up in river. Davenport, 10th, although no ice has yet appeared in the river, the weather has been so cold that navigation is now considered closed for the season. St. Paul, 15th, 17th, 24th, floating ice in river, 18th, river frozen along the banks. Steamer "Arkansas" left port; the last boat of season. 20th, river frozen along the banks; channel full of ice; navigation practically closed for the season. River has been open from April 7th to November 20th, a period of 227 days. The greatest depth of water (19 feet 8 inches) occurred April 29th; lowest (3 feet 4 inches) occurred September 14th and 15th, giving a range for the season of 11 feet 5 inches; average depth, 11 feet 5 inches. 22d, ice gorged in river below city. 23d, gorge broke during morning. *Milwaukee River:* Milwaukee, 20th, river frozen over. *Red River of the North:* Moorehead, Minn., 15th, river frozen over. St. Vincent, Minn., 13th, river frozen. Winnipeg, 18th, river frozen over, but not strong enough to permit crossing. *Tongue River:* Ft. Keogh, Mont., 18th, river frozen over. *Missouri River:* Bismarck, 18th, river frozen over and teams crossing. Yankton, 18th, river frozen over. Ft. Buford, 17th, river frozen over. Ft. Sully, Dak., 15th, ice floating in river.